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September 29, 2016

[Transmitted by e-mail to: blm_ak_gmt2_comments@blm.gov]

Re: Climate change specific scoping comments on BLM's Supplemental Environmental Impact Statement for the proposed Greater Mooses Tooth Two development project

Dear Ms. Rice,

Thank you for the opportunity to comment on the Supplemental Environmental Impact Statement ("SEIS") for the Alpine Satellite Development Plan for the Proposed Greater Mooses Tooth Two ("GMT-2") development project. Please accept and fully consider the following comments and practical climate change-related actions from The Wilderness Society ("TWS").

The mission of TWS is to protect wilderness and inspire Americans to care for our wild places. TWS has over half a million members and supporters who care deeply about protecting our wild public lands, including how the western Arctic's National Petroleum Reserve-Alaska ("NPR-A" or "Reserve") is responsibly managed. TWS is committed to helping BLM uphold its mandate to protect Special Areas and values of the NPR-A, while also providing opportunities for energy development. We also have a strong interest in seeing that the impacts of climate change are fully evaluated, considered, and offset from projects on public lands.

In the following letter we address: (1) why the National Environmental Policy Act ("NEPA") requires BLM to assess the climate change impacts from the proposed GMT-2 project, (2) BLM's need to effectively track greenhouse gas ("GHG") emissions originating from the NPR-A, and all other federal lands, through formal accounting methodologies, and (3) how the principles and goals of mitigation, including the NPR-A's regional mitigation strategy ("RMS"), should be used to avoid, minimize, and offset the climate change-related impacts of this project through durable conservation actions.

1. NEPA requires BLM to assess the climate impacts of the GMT-2 project.

NEPA's requirement that agencies prepare an Environmental Impact Statement ("EIS") seeks to make certain that agencies "will have available, and will carefully consider, detailed information

concerning significant environmental impacts," and that "the relevant information will be made available to the larger [public] audience."[1] By preparing an EIS that in "form, content and preparation foster[s] both informed decision-making and informed public participation," NEPA obligates federal agencies to take a "hard look" at environmental impacts.[2] Agencies satisfy the "hard look" requirement when they engage in "a reasonably thorough discussion of the significant aspects of the probable environmental consequences" of an action.[3] As recently finalized guidance from the Council on Environmental Quality[4] underscores, "[c]limate change is a fundamental environmental issue, and its effects fall squarely within NEPA's purview" since climate change "can make a resource, ecosystem, human community, or structure more susceptible to many types of impact and lessen its resilience to other environmental impacts apart from climate change. This increase in vulnerability can exacerbate the effects of the proposed action."[5] Therefore, an analysis of climate change "should be similar to the analysis of other environmental impacts under NEPA."[6]

As a result, federal agencies are formally obligated under NEPA to analyze not only the effects of proposed actions on climate change, but also the implications of climate change on the environmental effects of proposed actions. These effects are already occurring and are expected to increase, resulting in shrinking water resources, extreme flooding events, invasion of more combustible non-native plant species, soil erosion, loss of wildlife habitat, and larger, hotter wildfires. These impacts have been catalogued in recent scientific studies by federal agencies, including the National Climate Assessment,[7] and highlighted by President Obama.[8] "GHGs already in the atmosphere will continue altering the system into the future, even with current or future emissions control efforts."[9] In other words, climate change impacts are and will continue to be part of the new normal, and NEPA analyses must account for this reality.

A. BLM must calculate the potential greenhouse gas emissions associated with the GMT-2 project.

Climate change effects[10] must be integrated into the NEPA analysis as part of the environmental baseline. Agencies are required under NEPA to "describe the environment of the areas to be

[1] Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 349 (1989).
[2] Native Ecosystems Council v. U.S. Forest Serv., 418 F.3d 953, 960 (9th Cir. 2005).
[3] Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin., 538 F.3d 1172, 1194 (9th Cir. 2008) (quoting Idaho Sporting Cong. v. Thomas, 137 F.3d 1146, 1149 (9th Cir. 1998), *overruled on other grounds by Lands Council v. McNair*, 537 F.3d 981, 997 (9th Cir. 2008)).
[4] Christina Goldfuss, Council on Environmental Quality, Memorandum for Heads of Federal Departments and Agencies, Final Guidance or Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews (Aug. 1, 2016) (CEQ Guidance). The "Council was created by NEPA, and charged in that statute with the responsibility 'to review and appraise the various programs and activities of the Federal Government in the light of the policy set forth in . . . this Act . . ., and to make recommendations to the President with respect thereto.'" Andrus v. Sierra Club, 442 U.S. 347, 358 (1979) (alterations in original) (quoting 42 U.S.C. § 4344(3)).
[5] *Id.* at 6, 21.
[6] *Id.* at 2.
[7] *Available at* http://nca2014.globalchange.gov/.
[8] See Exec. Order No. 13,653, § 1 (Nov. 1, 2013).
[9] CEQ Guidance at 20.
[10] Note that we use the term "effects" and "impzcts" interchangeably in these comments.

affected or created by the alternatives under consideration."[11] The current affected environment sets the "baseline" for the impacts analysis and comparison of alternatives. As the U.S. Court of Appeals for the Ninth Circuit held, "without establishing the baseline conditions . . . there is simply no way to determine what effect the proposed [action] will have on the environment and, consequently, no way to comply with NEPA."[12] Excluding climate change effects from the environmental baseline ignores the reality that the impacts of proposed actions must be evaluated based on the already deteriorating, climate-impacted state of the resources, ecosystems, human communities, and structures that will be affected. Accordingly, existing and reasonably foreseeable climate change impacts must be included as part of the affected environment, assessed as part of the agency's hard look at impacts, and integrated into each of the alternatives, including the no action alternative. Simply acknowledging climate impacts as part of the affected environment is insufficient. Rather, agencies must incorporate that information into their hard look at impacts and comparison of alternatives.

BLM cannot make an informed decision about how much disturbance actions under GMT-2 will have on the region or what the degraded ecosystem can withstand under changing conditions without fully understanding the baseline and adequately assessing the action's direct, indirect and cumulative effects.

On August 2, 2016, the Council on Environmental Quality (CEQ) released its long-awaited final guidance on considering greenhouse gas (GHG) emissions and the effects of climate change in NEPA reviews. The overarching goal of the guidance is to provide greater clarity and more consistency in how federal agencies address climate change in their NEPA reviews and to facilitate compliance with existing NEPA requirements. The guidance recognizes that "[c]limate change is a fundamental environmental issue, and its effects fall squarely within NEPA's purview."[13] It recognizes that identifying and analyzing the interactions between our changing climate and the environmental impacts from a proposed action can have a number of benefits, including identifying opportunities to reduce and mitigate GHG emissions, to improve environmental outcomes, and to help safeguard communities, infrastructure, and resources against the effects of climate change.

According to the guidance, agencies should quantify projected GHG emissions using available data and quantification tools, and use projected emissions as a proxy for assessing potential climate change effects by comparing those GHG quantities across alternative scenarios. They should also provide a quantitative analysis for reasonably foreseeable direct and indirect GHG emissions impacts, including upstream and downstream activities "that have a reasonably close causal relationship to the Federal action." The guidance specifically provides that the agency should be considering emissions from a proposed action even if they represent a small fraction of global emissions; rather, "[c]limate change results from the incremental addition of GHG

[11] 40 C.F.R. § 1502.15.
[12] *Half Moon Bay Fisherman's Marketing Ass'n v. Carlucci*, 857 F.2d 505, 510 (9th Cir. 1988).
[13] CEQ Guidance at 2.

emissions from millions of individual sources, which collectively have a large impact on a global scale."[14]

As a general approach, BLM should first assess and, wherever possible, quantify or estimate GHG emissions by type and source by analyzing the direct operational impacts of their proposed actions. Assessment of direct emissions of GHG from on-site combustion sources is relatively straightforward. The indirect effects of a project may be more far-reaching and will require careful analysis. Within this category, agencies should evaluate, *inter alia*, GHG and GHG-precursor emissions associated with construction, electricity use, fossil fuel use, downstream combustion of fossil fuels extracted or refined by the project, water consumption, water pollution, waste disposal, transportation, the manufacture of building materials, and land conversion. As discussed in the CEQ Guidance, we understand that the level of effort utilized in the NEPA analysis should be proportionate to the scale of the emissions.[15]

Because failure to conserve carbon sinks results in direct and quantifiable GHG emissions as well as indirect effects from reductions in carbon sequestration, the GHG effects of destruction of the landscape's carbon sinks should be analyzed as part of the NEPA analysis. The GHG effects of destruction of carbon sinks should be analyzed both in terms of carbon already stored in the landscape and soil itself and in terms of the landscape's ongoing carbon-capturing properties. Such an analysis requires that an initial inventory of carbon storage potential be conducted for each landscape. The environmental review should assess and where possible quantify all the various component carbon pools – live trees, other vegetation, dead trees or vegetation (coarse, woody debris and snags), logs, litter, duff, and mineral soil – and the fluxes of carbon to and from these pools, due to natural processes like decay and fire, and those associated with management, harvest and/or manufacture of extracted resources, including the burning of fossil fuels needed to remove, transport, and process those materials. In conducting this assessment, fluxes associated with fire management and the restoration of the resilient native ecology should be accounted for separately. Net fluxes from terrestrial pools to the atmosphere may occur from management activities, such as prescribed and natural fire management, but may be considered beneficial if they enhance the long-term carbon storage ability of an ecosystem and enhance ecosystem integrity. Again, the level of effort utilized in the NEPA analysis should be proportionate to the scale of the emissions.

The Wilderness Society seeks to provide the BLM with more detailed data on calculating impacts and emissions associated with climate change in relation to the GMT-2 project and past (GMT-1, CD-5) and future plans and projects. We look forward to discussing this with you further.

[14] CEQ Guidance on Climate Change in NEPA Reviews at 10.
[15] CEQ Guidance at 17.

B. BLM must assess the direct, indirect and cumulative impacts of emissions from the GMT-2 project on climate change, as well as climate change's impacts on the environment.

The NEPA requirement to consider climate change impacts has been repeatedly upheld by the courts. In *Center for Biological Diversity v. NHTSA*, the U.S. Court of Appeals for the Ninth Circuit assessed an agency's NEPA analysis for a rule requiring automobile manufacturers to increase the fuel efficiency of their vehicles, thereby lowering average tailpipe emissions per mile driven. The Court stated that "[t]he impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct."[16] Likewise, in *Mid States Coalition for Progress v. Surface Transportation Board*, the U.S. Court of Appeals for the Eighth Circuit held that NEPA requires an agency to disclose and analyze the impacts of future combustion of mined coal when deciding whether to approve a railroad line providing access to coal mining areas.[17] In addition, consistent with the previous two cases, the U.S. District Court of Colorado recently assessed an EIS for a land-management decision in similar circumstances to the program decision at issue here and concluded that NEPA requires analysis of the climate effects of burning fossil fuels that could be produced as a result of the decision.[18] In effect, NEPA requires an agency to assess the climate consequences of the end use of energy from potential future development under the rule in the EIS it prepared for the decision.[19]

To adequately satisfy NEPA's requirements, the BLM must analyze and quantify the direct, indirect, and cumulative impacts of emissions produced from the GMT-2 project, especially the emissions' contribution to advancing both climate change and the long-term effects of climate change. Direct effects are those "which are caused by the action and occur at the same time and place."[20] Indirect effects are those "caused by the action, and later in time or further removed in distance, but still reasonably foreseeable."[21] Cumulative effects are the effects of the action in combination with "other past, present, and reasonably foreseeable future actions."[22] As a result, NEPA requires agencies to assess the climate effects of direct emissions from a project, such as emissions from construction activities, the indirect environmental impacts, such as degraded air quality, and the long-term cumulative impacts caused by the project's development and continued activity.

[16] Ctr. for Biological Diversity, 538 F.3d at 1217. 1223-25 (9th Cir. 2008).
[17] 345 F.3d 520, 549-50 (8th Cir. 2003).
[18] High Country Conservation Advocates v. U.S. Forest Serv., 52 F. Supp. 3d 1174, 1197-98 (D. Colo. 2014).
[19] See id. at 1196-98.
[20] 40 C.F.R. § 1508.8(a).
[21] S. Fork Band Council of W. Shoshone of Nev. v. U.S. Dep't of the Interior, 588 F.3d 718, 725 (9th Cir. 2009) (quoting 40 C.F.R. § 1508.8(b)).
[22] See Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt., 387 F.3d 989, 993 (9th Cir. 2004) (quoting 40 C.F.R. § 1508.7).

BLM should consider:

- How burning oil from the project for end-use activities like transportation will affect climate change, including an assessment of the emissions' effects at the time they will occur throughout the life of the project. One way of assessing these effects is the social cost of carbon method, which estimates the marginal damages associated with an increase in carbon dioxide emissions in a given year.[23]
- How oil from the GMT-2 project will affect the longevity of the Trans-Alaska Pipeline System and thus contribute to the continued production of oil from other fields in northern Alaska.
- How emissions from the extraction and transportation of oil and gas from the site, including short-term climate forcers like black carbon, will affect climate change.

C. BLM must estimate the potential increase in vulnerability to climate change impacts.

As discussed above, the agency must evaluate the direct, indirect and cumulative impacts of climate change emissions from the project. The agency must also take a hard look at the impacts of climate change and the potential increase in vulnerability to the project area from climate change. As stated in the CEQ Guidance:

> The analysis of climate change impacts should focus on those aspects of the human environment that are impacted by both the proposed action and climate change. Climate change can make a resource, ecosystem, human community, or structure more susceptible to many types of impacts and lessen its resilience to other environmental impacts apart from climate change. This increase in vulnerability can exacerbate the effects of the proposed action . . . Such considerations are squarely within the scope of NEPA and can inform decisions on whether to proceed with, and how to design, the proposed action to eliminate or mitigate impacts exacerbated by climate change. They can also inform possible adaptation measures to address the impacts of climate change, ultimately enabling the selection of smarter, more resilient actions.[24]

In order to fulfill its responsibilities under NEPA, the BLM must fully evaluate the potential increased vulnerabilities to the landscape and communities caused by climate change and the impacts of this project to potentially exacerbate those vulnerabilities. This will provide the agency, the project proponent and the public with more information on possible mitigation measures that could be implemented as well as measures to boost the resiliency of the landscape.

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[23] *See* Interagency Working Group on Social Cost of Carbon, United States Government, Technical Support Document Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 (revised July 2015), *available at* https://www.whitehouse.gov/omb/oira/social-cost-of-carbon. *See also* CEQ Guidance at 33 n. 87.

[24] CEQ Guidance at 21-22.

2. BLM needs to effectively track GHG emissions originating from federal lands, including the NPR-A, through formal accounting methodologies.

As discussed above, BLM needs to account for GMT-2's GHG emissions. To effectively do this, BLM should use this SEIS to begin formally measuring and tracking the GHG emissions originating from the NPR-A. The NPR-A's GHG account should include GMT-1, the project enabling GMT-2, as well as associated infrastructure such as pipelines and road and aircraft traffic. Including GMT-1 is also necessary for BLM to account for the cumulative emissions originating from the NPR-A. CD-5, which also enables GMT-2 and which is located within the boundaries of the NPR-A with production on private lands, should be part of the calculation of cumulative emissions.

The NPR-A's GHG budget could then be combined with other, future GHG budgets from other federal administrative units in Alaska, such as federal offshore projects and development in the Kenai National Wildlife Refuge. This account should then be evaluated in relation to the nation's federal public lands (and waters) emissions budget.

A. BLM should analyze whether expected future production from GMT-2 would result in climate emissions beyond the scope of U.S. climate commitments.[25]

Fossil fuel production on federal public lands and mineral estates is extensive and the production of GHGs resulting from the exploration, extraction, transportation and combustion of these fuels is significant. The climate change impacts observed from GHG emissions are already evident and will worsen unless emissions of GHGs are greatly reduced. The wide range of impacts from climate change, including melting glaciers and earlier snow melts in our mountains that disrupt water supplies in the west, thawing permafrost, forest fires, widespread drought, rising sea levels, and the spread of invasive species, have been rigorously and scientifically documented by the Intergovernmental Panel on Climate Change ("IPCC"), as well as American researchers and agencies. These have led to substantial commitments made by this Administration to reduce our national contribution to climate change. As part of these commitments, federal agencies must begin to not just measure, but to act on the basis of potential GHG emissions.

Our public lands and minerals are held in trust for the public. We must ensure this trust is not broken when fossil fuels are leased and developed on these lands. The federal fossil fuels program must provide assurance the public trust will not be violated by carefully considering climate change issues and taking steps to avoid, minimize and offset impacts through compensatory mitigation.

In 2012, as much as 21 percent of the Nation's GHG emissions originated from coal, oil and natural gas extracted from the public lands.[26]

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[25] This is not likely for GMT-2 but we are including this analysis for methodological reasons.

[26] Claire Moser, Joshua Mantell, Nidhi Thakar, Chase Huntley and Matt Lee-Ashley. *Cutting Greenhouse Gas from Fossil-Fuel Extraction on Federal Lands and Waters*. March 19, 2015. Policy brief and underlying analysis is available at http://wilderness.org/blog/blind-spot-plan-reduce-emissions-slowing-progress-fight-against-climate-change (accessed July 28, 2016).

B. Leading science has firmly established the need for developing thresholds of acceptable fossil energy extraction for the planet based on expected GHG emissions.

The scientific understanding that the global increase in temperature due to greenhouse gas emissions must be capped at or below 2-degree Celsius to avoid unmanageable climate change consequences is well-established. The 2-degree Celsius threshold was first enshrined in the 2009 Copenhagen Accord[27] and reaffirmed in the 2015 Paris Agreement as the limit for "acceptable" warming.[28] During that time, the international scientific community's understanding of the interaction between fossil fuel development and temperature thresholds has greatly increased, and today it is widely agreed that development of additional reserves should be considered in the context of warming goals—giving rise to the idea of a carbon budget for the planet. In fact, this notion has been assessed and supported by the IPCC in all assessment reports going back to 1990 and has yielded a methodology routinely employed and updated annually by the Global Carbon Project.[29]

The IPCC's analytic method was further advanced in January 2015 in a journal paper that evaluated known fossil fuel reserves to determine, based on current emissions factors and global warming potential, how much should be left in-place to maximize the planet's chances of remaining below 2 degrees Celsius.[30] Importantly, it quantifies the regional distribution of known fossil-fuel reserves and resources and, through modeling a range of scenarios based on least-cost climate policies, identifies geographically-specific resources that should not be burned between 2010 and 2050 to ensure the world stays within a 2-degree Celsius limit in the most

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[27] Copenhagen Accord ¶ 1, *agreed* Dec. 18, 2009, FCCC/CP/2009/11/Add.1, *available at* http://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf ("recognizing the scientific view that the increase in global temperature should be below 2 degrees Celsius" relative to pre-industrial temperatures to "stabilize greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system"); *id.* at ¶ 2 (agreeing that "deep cuts in global emissions are required according to science" to meet this goal).

[28] The United States and other signatory nations committed to reducing greenhouse gas emissions "well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels." Paris Agreement art. 2, ¶ 1(a), *adopted* Dec. 12, 2015, FCCC/CP/2015/L.9, *available at* http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf. The authority cited in the letter is being provided via regualtions.gov and it should be included in the administrative record for this decision.

[29] The IPCC has produced and reviewed a carbon budget for the planet in all assessment reports (Ciais et al., 2013; Denman et al., 2007; Prentice et al., 2001; Schimel et al., 1995; Watson et al., 1990), as well as by others (e.g. Ballantyne et al., 2012). These assessments included carbon budget estimates for the decades of the 1980s, 1990s (Denman et al., 2007) and, most recently, the period 2002–2011 (Ciais et al., 2013). The IPCC methodology has been adapted and used by the Global Carbon Project (GCP, www.globalcarbonproject.org), which has coordinated a cooperative community effort for the annual publication of global carbon budgets up to the year 2005 (Raupach et al., 2007), 2006 (Canadell et al., 2007), 2007 (published online; GCP, 2007), 2008 (Le Quéré et al., 2009), 2009 (Friedlingstein et al., 2010), 2010 (Peters et al., 2012b), 2012 (Le Quéré et al., 2013; Peters et al., 2013), 2013 (Le Quéré et al., 2014), and most recently 2014 (Friedlingstein et al., 2014; Le Quéré et al., 2015). Each of these papers updated previous estimates with the latest available information for the entire time series. From 2008, these publications projected fossil fuel emissions for one additional year using the projected world gross domestic product (GDP) and estimated trends in the carbon intensity of the global economy (Rogelj, 2016).

[30] McGlade, Christophe and Paul Ekins, *The Geographical Distribution of Fossil Fuels Unused When Limiting Global Warming to 2 °C*, 517 Nature (187) (2015).

cost-efficient manner.[31] Importantly, this study demonstrates that there are geographically-specific analyses available that support comparative judgments about the appropriateness of tapping into different resources and plays. Attachment 1 provides a fuller discussion of the literature.

C. The United States has set national commitments to reduce GHG emissions.

The United States has submitted its target to cut net GHG emissions to the United Nations Framework Convention on Climate Change. This Intended Nationally Determined Contribution (INDC), as provided for in the Paris Agreement, is a formal statement of the U.S. target to reduce emissions by 26 to 28 percent below 2005 levels by 2025. In addition, to achieve a no more than 2 degrees Celsius temperature increase, heat trapping gasses in the atmosphere must be kept at or below 450 parts per million $CO_{2\text{-eq.}}$, which means that industrialized nations like the U.S. will have to reduce their emissions an average of 70 to 80 percent below 2000 levels by 2050.

In addition, on June 29, 2016 the leaders of Canada, Mexico, and the United States committed to the North American Climate, Clean Energy, and Environment Partnership. Under this agreement, the countries will pursue an historic goal for North America to strive to achieve 50 percent clean power generation by 2025. "Canada, the U.S., and Mexico will work together to implement the historic Paris Agreement, supporting our goal to limit temperature rise this century to well below 2 degrees C, and pursuing efforts to limit the temperature increase to 1.5 degrees C."[32]

These commitments are consistent with and required by The President's Climate Action Plan (June 2013) which calls for many steps to combat climate change such as reductions in CO_2 emissions from power plants, increased use of renewable energy, improved automobile efficiency standards, and reducing methane emissions, among many other things.[33] But to achieve the goals of the Climate Action Plan, which include "steady, responsible action to cut carbon pollution, [so] we can protect our children's health and begin to slow the effects of climate change so that we leave behind a cleaner, more stable environment," it will also be necessary to address issues related to fossil fuel extraction from our public lands. By our analysis, this translates into a maximum allowable lifecycle total for carbon emissions from federal energy development of 500 million metric tons $CO_{2\text{-eq}}$ by 2050.

D. Pursuant to those commitments, government should establish carbon reduction targets for fossil energy production on federal lands.

i. Methodologies exist to develop a greenhouse gas emissions budget

[31] *See id.* at 187-90.
[32] *See* https://www.whitehouse.gov/the-press-office/2016/06/29/leaders-statement-north-american-climate-clean-energy-and-environment (presenting Leaders' Statement on a North American Climate, Clean Energy, and Environment Partnership).
[33] *See also* Climate Action Plan Strategy to Reduce Methane Emissions (March 2014) (presenting the President's methane reduction strategy).

We propose that the BLM develop a carbon budget for all fossil fuels produced from public lands, and derive from that analysis an oil-specific target. Determining a "carbon reduction target" involves addressing a number of complicated factors including time horizon, target temperature, units, short-term climate pollutant emissions (like methane), aerosol emissions, climate sensitivity, and probability of success. Nevertheless, the approach is increasingly in use and a growing community of practice has demonstrated that such an approach is possible to calculate for federal lands.

For example, we at The Wilderness Society followed a common approach using publicly-available data.[34] We determined that lifecycle federal emissions should be less than 500 million metric tons carbon dioxide equivalent (MT $CO_{2\text{-eq}}$) by 2050 – and direct (upstream) emissions must be below 25 million MT $CO_{2\text{-eq}}$. This represents a 70 percent reduction in emissions.

After conducting a similar analysis, BLM can then create a specific reduction target for oil. The agency would begin by establishing a reasonable carbon reduction target for oil produced on federal lands in terms of $CO_{2\text{-eq}}$, taking into account current production, projected future demand and our national policies and goals as well as our international commitments. For example, the agency can start by looking at current (or historic baseline) oil production and/or $CO_{2\text{-eq}}$ emissions as a percentage of total emissions from public lands. BLM can then take the 70 percent minimum reduction target established earlier and apply that to current (or historic baseline) oil $CO_{2\text{-eq}}$ emissions to generate a new MT $CO_{2\text{-eq}}$ goal. This number will yield a carbon reduction target for oil. From there, BLM could generate performance milestones against which to peg progress. Then, the agency should determine the potential $CO_{2\text{-eq}}$ currently under development and/or lease and identify how much, if any, cap space remains for current leasing.

Our assessment of a carbon budget for federal lands illustrates that such an exercise can be conducted with available data provided key assumptions are disclosed. We encourage BLM to prepare its own analysis utilizing a similar approach.

ii. Results should be incorporated into a carbon management system, including establishing GHG emissions reduction targets for federal lands energy production.

We further recommend integrating the results of this analysis into a "carbon management system" at the Department-level for all federal fossil fuel energy including oil, gas and coal. Such a system would develop emissions reduction targets in accordance with national and international climate commitments as a basis for ensuring alignment, identifying new reduction opportunities and making future leasing determinations. A key element of this approach is tracking and disclosing emissions to measure progress and ensure accountability.

The analysis used to develop an emissions reduction target would effectively determine a production curve from which interim performance milestones should be drawn. Those results would inform a leasing schedule that is consistent with U.S. climate goals and commitments,

[34] We will shortly be releasing a white paper that presents our results, calculations, and highlights key assumptions and provides links to data elements. We intend to provide that information as a supplemental comment and, as appropriate, incorporate it herein.

honors valid existing rights, and better anticipates the future market demand for oil in an increasingly carbon-constrained economy.

This management system should inform BLM's mitigation requirements to avoid, minimize and compensate for impacts consistent with this country's climate change commitments, specifically the requirement to reduce emissions by 26 to 28 percent below 2005 levels by 2025. This will require that not just reduction targets, but also a reasonable forecast of future carbon emissions be developed, to inform whether new resource commitments help or hinder efforts to stay at or below 500 million metric tons $CO_{2\text{-eq}}$ by 2050.

In order to hit these targets, we envision an analysis of future emissions from oil, gas, and coal playing an integral role in future agency planning and leasing determinations. The analysis used to develop reduction targets (measured in terms of $CO_{2\text{-eq}}$) will provide a target for the agency to stay below when making leasing decisions. The agency could consider how each new lease impacts the budget and while it could be used as a limit or hard cap in the future, we recommend the budget only guide decisions at least initially.

iii. All new planning and lease commitments should be analyzed relative to expected future emissions from all leased resources.

We believe that reaching international climate commitments, including the Paris Agreement goals, will require the U.S. to adopt measures that reduce the GHG associated with production of fossil fuels on public lands in addition to efforts to reduce GHG from power plants and fuel efficiency for vehicles.[35] This is aligned with the GHG reduction targets set for nearly all other significant federal activities (see Attachment 2). It is time to put a similar set of performance targets in place for federal fossil energy leasing and production, and that will require measures capable of making evaluative judgements in permitting decisions about whether or not to avoid foreseeable emissions associated with new projects in light of these targets.

E. The expected future emissions resulting from this project should be analyzed under greenhouse emissions reduction targets.

The emissions reduction targets set for the agency should be compared with the expected future emissions associated with this project in the context of all expected future production of fossil energy. The agency should consider in the SEIS how this project would affect the agency's ability to meet that target, and whether specific measures should be required of this project to minimize associated GHGs.

3. BLM must ensure that the SEIS addresses mitigation for climate impacts consistent with all relevant laws and policies, including current mitigation guidance.

[35] 80 Fed. Reg. 64,662 (Oct. 23, 2015) (existing power plants); 80 Fed. Reg. 64,510 (Oct. 23, 2015) (new power plants); 77 Fed. Reg. 62,624 (Oct. 15, 2012) (light-duty vehicles); 76 Fed. Reg. 57,106 (Sept. 15, 2011) (medium- and heavy-duty vehicles).

A. Consistent with the mitigation hierarchy, BLM must avoid, minimize and offset impacts from GMT-2, including climate change-related impacts.

BLM has significant obligations and authority related to mitigation for all unavoidable impacts. Secretarial Order 3330 requires the development of a landscape-scale mitigation policy for the Department of the Interior. Section 4(c) of Secretarial Order 3330 directs the Task Force to:

> [I]dentify any new policies or practices, revisions to existing policies or practices, or regulatory or other changes that could be implemented to incorporate landscape-scale planning into mitigation-related decisions…The Task Force will also determine what steps can and should be taken to ensure that mitigation opportunities are identified as early in the permitting process as possible, such as at the scoping or pre-application stage, to maximize predictability and transparency in the review and permitting process (emphasis added).

In a report to the Secretary of the Interior, the Energy and Climate Change Task Force laid out a landscape approach to mitigation.[36] This approach contained the following steps:

1. Identifying key landscape attributes, and the conditions, trends and baselines that characterize these attributes;
2. Developing landscape-scale goals and strategies;
3. Developing efficient and effective compensatory mitigation programs for impacts that cannot be avoided or minimized; and
4. Monitoring and evaluating progress and making adjustments, as necessary, to ensure that mitigation is effective despite changing conditions.

BLM's current guidance (IM No. 2013-142 and Draft Manual Section 1794) states that as part of approving specific land uses, mitigation implementation may be "within (onsite) or outside of the area of impact." The manual emphasizes that onsite mitigation is always the first choice, including a "mitigation priority order," then discusses options to provide offsite mitigation by replacing or providing similar or substitute resources or values through "restoration, enhancement, creation, or preservation."

BLM's policy emphasizes that it is designed to "shift the BLM's mitigation focus from a permit-by-permit perspective to a proactive regional-scale mitigation planning perspective" and to cut across jurisdictions and land ownership to "attain the highest mitigation benefit, regardless of land ownership." These key tools from the agency's guidance should also be emphasized as important aspects of incorporating mitigation into land use planning.

BLM is also considering new tools and approaches the agency could use to increase the effectiveness of mitigation on public lands, including layering protective management and designations and exploring creative ways existing authorities could be used for conservation benefits. Effective new mitigation tools and approaches should be integrated into planning as well.

[36] Clement, J.P. et al. 2014. A strategy for improving the mitigation policies and practices of the Department of the Interior. A report to the Secretary of the Interior from the Energy and Climate Change Task Force, Washington, D.C., 25 p.

Mitigating climate-related impacts includes avoiding and minimizing generation of GHG emissions through management prescriptions and preventing harm to carbon sinks. The CEQ guidance on considering climate change in NEPA analyses provides that agencies should analyze reasonable alternatives that would mitigate both direct and indirect GHG emissions impacts and the cumulative effects of climate change (e.g., enhanced energy efficiency, carbon sequestration, lower GHG-emitting technology). [37] BLM must address the quality of mitigation measures as well as ensure they are additional, verifiable, durable, enforceable, and will be implemented.

In addition to the legal and policy directions which require mitigation for climate impacts from GMT-2 and provide the agency with ample discretion to require mitigation, it is important to underscore that, as a land manager, the federal government is facing huge and rapidly escalating costs to address the impacts caused by fossil-fuel driven climate change. Forest fires, widespread drought, unusual flooding, rising sea levels, spread of invasive species and spread of disease already result in significant costs to the federal government, and each new oil production project the BLM authorizes increases these problems and the associated costs. Research from the University of Vermont's Gund Institute for Ecological Economics and The Wilderness Society suggests that total costs in degraded ecosystem services could exceed $14.5 billion annually under a 2-degree Celsius warming scenario.[38] These costs are ultimately borne by all American taxpayers, and BLM has a responsibility to recoup these costs when it makes decisions authorizing activities that cause these impacts and associated costs.

B. BLM should utilize the NPR-A's regional mitigation strategy to address unavoidable climate change impacts

The BLM should require compensatory mitigation to offset the unavoidable climate change impacts of GMT-2. This action would contain several key features:

- *BLM should quantify and offset emissions through specific compensatory mitigation actions*

Quantifying climate change impacts is becoming increasingly more practical, and the science connecting impacts to temperature changes increasingly more precise. Compensatory mitigation actions can be directed at enhancing the adaptive capacity of human and natural communities in the affected landscape to improve their health and resilience in the face of expected change. Offsetting actions should include investments in land protection to ensure that NPR-A's ecological systems have the space and conditions to adapt.

Significant opportunity exists to offset GHG emissions. EPA has repeatedly urged land management agencies to assess carbon offsets in Environmental Assessments and EISs as a way

[37] *Id*. at 13, 16.

[38] See Esposito, Valerie; Phillips, Spencer; Boumans, Roelof; Moulaert, Azur; Boggs, Jennifer. 2011. "Climate change and ecosystem services: The contribution of and impacts on federal public lands in the United States." In: Watson, Alan; Murrieta-Saldivar, Joaquin; McBride, Brooke, comps. *Science and stewardship to protect and sustain wilderness values: Ninth World Wilderness Congress symposium*; November 6-13, 2009; Merida, Yucatan, Mexico. Proceedings RMRS-P-64. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. p. 155-164. Available at http://www.fs.fed.us/rm/pubs/rmrs_p064.pdf? (accessed July 23, 2016).

to reduce the climate change impacts of agency actions. For example, EPA specifically recommended that the Forest Service's Lease Modifications EIS "acknowledge that revenues for carbon credits are available via several existing markets."[39] Similarly, EPA has recommended that a Forest Service NEPA analysis of a forest health project "discuss reasonable alternatives and/or potential means to mitigate *or offset* the GHG emissions from the action."[40] Numerous state agencies already use offsets to control GHG emissions.[41] Offsets can include participation in third-party offset markets or renewable energy credits.

- *BLM should address the full scope of lifecycle emissions through avoidance, minimization, and compensatory mitigation for oil/gas production, transport and combustion.*

The premise of compensatory mitigation is to address unavoidable harm. In the case of oil production, the GHG harm is primarily attributable to end-use combustion. Nevertheless, BLM should at least address the direct emissions that could be avoided or minimized by GMT-2 including utilizing natural gas rather than oil for power to the maximum extent, minimizing wellhead and pipeline gaseous releases, ensuring pipelines and storage tanks are maximally leak-free, venting and flaring are minimized, etc.

- *BLM should specify whether compensatory mitigation should be paid on an annual basis or paid up front.*

Fees collected for compensatory mitigation are often paid in a lump sum at the beginning of a project's operational life. In the case of climate impacts, however, it may make more sense to consider an annual payment on the basis of production, or an annualized payment schedule based on expected production with corrections on a semi-annual basis. By spreading payments over the life of the project (and tying them to when the impacts actually occur), the system should be both fairer to producers and more true to the spirit of mitigation.

- *BLM must ensure that compensatory mitigation actions are additional and durable, and last for the duration of impacts.*

This is an established principle for the Department's approach to mitigation, but it is particularly important with regard to climate impacts. For example, the Australian Government's Climate Change Authority found that, "Assessing additionality is a key feature of all baseline and credit schemes. An additionality test assesses whether a project or activity creates 'additional' emissions reduction that would not have occurred in the absence of the incentive. The baseline for the project assesses how much emissions have been reduced. Additionality is important to ensure that a baseline and credit scheme does not pay for emissions reductions that would have occurred anyway."[42]

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[39] EPA July 2012 Comment Letter (Ex. 29) at 5 (identifying four U.S. carbon exchanges creating a market for carbon credits).
[40] Letter of L. Svoboda, EPA, to T. Malecek, USFS, at 8 (Oct. 27, 2010).
[41] *See, e.g.*, Settlement Agreement, ConocoPhillips and California (Sept. 10, 2007) (California agency requiring offsets as a condition of approving a project), attached as Ex. 46; Minn. Stat. § 216H.03 subd. 4(b) (Minnesota law requiring offsets for certain new coal-fired power plants); Me. Rev. Stat. Ann. tit. 38, § 580-B(4)(c) (Maine law establishing greenhouse gas initiative that includes the use of carbon offsets).
[42] See http://www.climatechangeauthority.gov.au/reviews/carbon-farming-initiative-study/additionality

4. Conclusion

We appreciate the opportunity to engage in this effort; and we look forward to working with BLM to find greenhouse gas and conservation solutions for this and other projects around climate change. We plan on following-up with additional comments and data regarding the GMT-2 proposal. Thank you for considering these comments and please contact us with any questions.

Sincerely,

Nicole Whittington-Evans
Alaska Regional Director
The Wilderness Society

Cc. Bud Cribley, BLM Alaska State Director
Stacie McIntosh, BLM Arctic Field Office Manager

Attachment 1: History of the Origins of the Carbon Budget Concept in the Scientific Literature

In 2012, the International Energy Agency, an international organization established to "provide authoritative research and analysis on ways to ensure reliable, affordable and clean energy" for its members,[43] concluded there is a limit to the amount of fossil fuels that can be developed if the world is to remain within acceptable warming thresholds. Based on an assessment of global carbon reserves, and given existing pollution controls, the agency concluded that "[n]o more than one-third of proven reserves of fossil fuels can be consumed prior to 2050 if the world is to achieve the 2-degree C goal."[44]

In the fall of 2014, this analysis was expanded and strengthened by the Intergovernmental Panel on Climate Change (Panel). The Panel published a comprehensive synthesis of the latest worldwide scientific consensus on climate change, called the Climate Change 2014 Synthesis Report.[45] The synthesis describes the recent scientific consensus that there is an overall limit to the amount of carbon dioxide (CO_2) that can be released into the atmosphere to stay within the 2 degree C warming cap.[46] It calculated that emissions from the year 1870 on would need to be limited to about 2,900 gigatons of CO_2 ($GtCO_2$) to have a reasonable chance of staying within the cap.[47] The Panel noted that as of 2011, about 1,900 $GtCO_2$ had already been emitted.[48] Therefore, the report concluded, to provide better than a 66 percent chance of limiting warming to less than 2 degree C, additional carbon dioxide emissions must be limited to 1,000 $GtCO_2$.[49] The Panel also estimated that there are about 3,670 to 7,100 $GtCO_2$ in proven fossil fuel "reserves" remaining in place, [50] which it describes as quantities of fossil fuels "able to be recovered under existing economic and operating conditions."[51] As the report notes, this volume of reserves is four to seven times the amount that can be burned to have better than a 66 percent

[43] International Energy Agency, World Energy Outlook 2012 at 2 (2012), *available at* https://www.iea.org/publications/freepublications/publication/WEO2012_free.pdf.
[44] *Id.* at 25.
[45] Intergovernmental Panel on Climate Change (Panel), Climate Change 2014: Synthesis Report (2014), *available at* http://www.ipcc.ch/report/ar5/syr/. In fact, a carbon budget has been assessed by the IPCC in all assessment reports (Ciais et al., 2013; Denman et al., 2007; Prentice et al., 2001; Schimel et al., 1995; Watson et al., 1990), as well as by others (e.g. Ballantyne et al., 2012). These assessments included budget estimates for the decades of the 1980s, 1990s (Denman et al., 2007) and, most recently, the period 2002–2011 (Ciais et al., 2013). The IPCC methodology has been adapted and used by the Global Carbon Project (GCP, www.globalcarbonproject.org), which has coordinated a cooperative community effort for the annual publication of global carbon budgets up to the year 2005 (Raupach et al., 2007), 2006 (Canadell et al., 2007), 2007 (published online; GCP, 2007), 2008 (Le Quéré et al., 2009), 2009 (Friedlingstein et al., 2010), 2010 (Peters et al., 2012b), 2012 (Le Quéré et al., 2013; Peters et al., 2013), 2013 (Le Quéré et al., 2014), and most recently 2014 (Friedlingstein et al., 2014; Le Quéré et al., 2015). Each of these papers updated previous estimates with the latest available information for the entire time series. From 2008, these publications projected fossil fuel emissions for one additional year using the projected world gross domestic product (GDP) and estimated trends in the carbon intensity of the global economy (Rogelj, 2016).
[46] *Id.* at 63.
[47] *Id.*
[48] *Id.*
[49] *Id.*
[50] Id. at 64 Table 2.2.
[51] *Id.* at Table 2.2 n.f (defining "reserves" and noting that "resources," by contrast, are quantities of fossil fuels where economic extraction is potentially feasible).

chance of remaining within the 2 degree C warming goal.[52] One of the expert reports feeding into the Panel's synthesis explained that to meet "[t]he emissions budget for stabilizing climate change at 2 degree C above pre-industrial levels... only a small fraction of reserves can be exploited."[53]

The Panel's synthesis analysis was refined further in January 2015, when the scientific journal *Nature* published a study entitled "The geographical distribution of fossil fuels unused when limiting global warming to 2 degrees Celsius."[54] The study identifies which fossil fuels must remain undeveloped to improve the chances of remaining below the warming cap. It quantifies the regional distribution of fossil-fuel reserves and resources and, through modeling a range of scenarios based on least-cost climate policies, identifies which reserves and resources could not be burned between 2010 and 2050 if the world efficiently complies with the 2 degree C limit.[55] It concludes that "a stark transformation in our understanding of fossil-fuel availability is necessary," because "large portions of the reserve base and an even greater proportion of the resource base should not be produced if the temperature rise is to remain below 2 degree C."[56] Thus, expanding on the prior analyses' conclusion that development of already-existing reserves would far exceed the cap, let alone development of the more speculative category of resources, the study concludes that a commitment to meet the 2 degree C limit would "render unnecessary continued substantial expenditure on fossil-fuel exploration, because any new discoveries could not lead to increased aggregate production."[57]

[52] *Id.* at 63.
[53] Blanco, Gabriel *et al.*, Drivers, Trends and Mitigation, in Climate Change 2014: Mitigation of Climate Change, Working Group III Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change at 251, 380 (2014), *available at* http://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_chapter5.pdf.
[54] McGlade, Christophe and Paul Ekins, *The Geographical Distribution of Fossil Fuels Unused When Limiting Global Warming to 2 °C*, 517 Nature (187) (2015).
[55] *See id.* at 187-90.
[56] *Id.* at 190.
[57] *Id.* at 187.

Attachment 2. Executive Orders Addressing Federal Agency Greenhouse Gas Emissions

Executive Order	Implementing Instructions	Inventory and Reporting Requirements	Key GHG Reduction Goals	Agency Requirements and Exceptions
E.O. 13693 (March 19, 2015) Planning for Federal Sustainability in the Next Decade	- Implementing Instructions for EO 13693 Planning for Federal Sustainability in the Next Decade of June 10, 2015; - Sustainable Locations for Federal Facilities of September 15, 2011; - Sustainable Practices for Designed Landscapes of October 31, 2011, as supplemented on October 22, 2014; - Federal Greenhouse Gas Accounting and Reporting Guidance [Revision 1] of June 4, 2012; and - Federal Agency Implementation of Water Efficiency and Management Provisions of EO 13514 of July 10, 2013	- Principal agencies (those responsible for the majority of GHG emissions and those managing the federal fleet) are subject to the OMB scorecard process - OMB annually reports on Federal agencies' and departments' progress toward meeting sustainability goals. A Steering Committee meets four times a year to receive and discuss reports	- 40% emissions reductions by FY2025 (FY2008 baseline) for scope 1 and 2 emissions (excluding federal lands energy development) - Continue progress in scope 3 emissions reductions of 13% by FY2020 (off FY2008 baseline) for six types of indirect emissions (excluding federal lands energy development) - 25% of their total facility energy (electric and thermal) is from clean energy sources by 2025. - 30% renewable energy target by 2025 - Reduce energy intensity in Federal buildings by 2.5% per year between 2015 and 2025 (total 25% reduction off FY2015 baseline). - Reduce per-mile GHG emissions from Federal fleets by 30% from 2014 levels by 2025, and	- Agencies submit GHG emissions goal within 90 days of EO (replaces FY2020 targets set under EO 13514) - Established Determining Agency Reduction Targets 2 tool (DART II) to assist agencies in setting targets

Executive Order	Implementing Instructions	Inventory and Reporting Requirements	Key GHG Reduction Goals	Agency Requirements and Exceptions
			increase the percentage of zero emission and plug in hybrid vehicles in Federal fleets. - Relative to the baseline of the agency's building energy use, reduce building energy intensity by 2.5% through the end of FY2025 - If agency operates fleet of >20 vehicles, they must improve agency fleet and vehicle efficiency by no less than 4% by the end of FY2017	
E.O. 13423 (January 24, 2007) Strengthening Federal Environmental, Energy, and Transportation Management	- Instructions for Implementing EO 13423 of March 29, 2007 - DOI Departmental Manual 515 DM 4 of August 13, 2008 - USDA Departmental Regulation 1058-001 of January 16, 2009 - BLM Instruction Memorandum 2012-104 of April 24, 2012 - Presidential Memorandum regarding Federal Fleet Performance of May 24,	- Each agency is required to provide compliance data to DOE no later than Dec. 31 of each year, starting with the FY 2007 data and each year thereafter. - Each agency shall implement internal policies that will ensure accurate tracking of vehicle acquisitions.	- Reduce GHGs by 3% annually or 300% by 2015 - Increase alternative fuel consumption at least 10% annually - Reduce petroleum consumption in fleet vehicles by 2% annually through 2015	- All agencies that operate 20 or more motor vehicles with the U.S. must comply with these instructions.

Executive Order	Implementing Instructions	Inventory and Reporting Requirements	Key GHG Reduction Goals	Agency Requirements and Exceptions
	2011			
Executive Order 13642 (May 9, 2013) Making Open and Machine Readable the New Default for Government Information	- Office of Management and Budget Memorandum M-13-13 of May 9, 2013	- None	- None	- Agencies must develop an Enterprise Data Inventory within six months - Agencies must create a Public Data Listing

Executive Order 13514 (October 5, 2009) Federal Leadership in Environmental, Energy, and Economic Performance	***Revoked and/or superseded by EO 13693*** - Instructions on Implementing EO 13514 Presidential Memorandum on Renewable Energy Target of December 5, 2013 - Presidential Challenge on Performance Contracting of May 24, 2014		- 28% reduction by 2020 (2008 baseline) for federal activities for scope 1 and 2 emissions (excluding federal lands energy) - Agencies set emissions reduction targets for FY2020 for two types of GHG emissions (excluding federal lands energy) - Set overall target of 13% reductions in scope 3 emissions by FY2020 (off FY2008 baseline) for six types of indirect emissions: employee commuting, business air travel, business ground travel, transmission, and distribution losses from purchased electricity use, contracted solid waste disposal and contracted waste water treatment	-